

Using Technology with Classroom Instruction that Works

Similarities and Differences

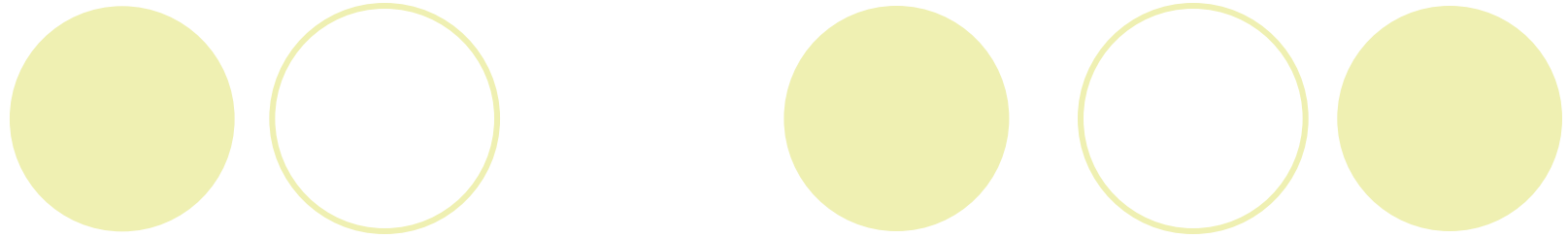


The Nine Categories of Instructional Strategies That Affect Student Achievement

¹ Strategy	Average Effect Size	Percentile Gain	Number of Studies
Identifying similarities & differences	1.61	45	31
Summarizing and note taking	1.00	34	179
Reinforcing effort and providing recognition	.80	29	21
Homework and practice	.77	28	134
Nonlinguistic representation	.75	27	246
Cooperative learning	.73	27	122
Setting objectives & providing feedback	.61	23	408
Generating and testing hypothesis	.61	23	63
Cues, questions, & advance organizers	.59	22	1251

2Matrix of the Four Planning Questions, the Nine Categories of Instructional Strategies, and the Seven Categories of Technology

Planning Questions	Instructional Strategies	Word Processing Applications	Spreadsheet Software	Organizing and Brainstorming	Data Collection Tools	Multimedia	Web Resources	Communication Software
What will students learn?	Setting Objectives	•		•	•		•	•
Which strategies will provide evidence of student learning?	Providing Feedback	•			•		•	•
	Providing Recognition				•	•	•	•
Which strategies will help students acquire and integrate learning?	Cues, questions, and advance organizers	•	•	•		•		
	Nonlinguistic Representation	•	•	•	•	•	•	
	Summarizing and note taking	•		•		•	•	•
	Reinforcing effort		•		•			
Which strategies will help students practice, review , and apply learning?	Identifying Similarities and Differences	•	•	•	•			
	Homework and Practice	•	•			•	•	•
	Generating and testing hypotheses		•		•		•	

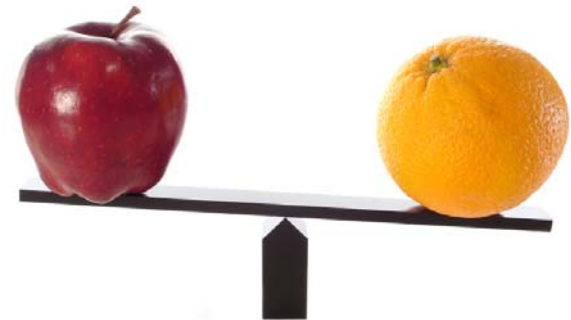


Strategies that help students
practice, review, and apply learning

- **Identifying Similarities & Differences**
- Homework & Practice
- Generating and Testing Hypothesis

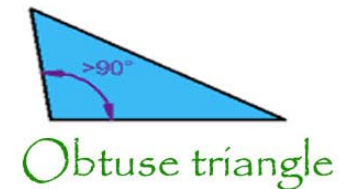
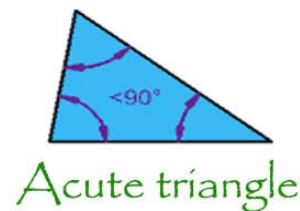
Identifying Similarities & Differences

- Helps students restructure their understanding of the content
- Students make new connections, experience fresh insights, and correct misconceptions
- Leads to deeper understanding



Generalizations

- Present students with **explicit guidance** in identifying similarities and differences
- Ask students to **independently** identify similarities and differences
- Represent similarities and differences in **graphic or symbolic form**



Recommendations

- Teach students to use **comparing**, **classifying**, **metaphors**, and **analogy** techniques
- Give students a model of the steps for engaging in the process
- Use a **familiar context** to teach students these steps
- Have students use **graphic organizers** as a visual tool
- Guide students. Work towards **less structure** and **more practice**

Identifying Similarities & Differences

- Graphic Organizers (Kidspiration, Inspiration, or Word)
- Spreadsheet Software (Excel – create comparison charts)
- Data Collection Tools (probes to collect data, then organize the data in Word or a spreadsheet to analyze and compare)

Use Word to create a graphic organizer

Basin	Bay
Canal	Canyon
Cape	Channel
Continent	Delta
Divide	Fault Line
Fjord	Foothill
Glacier	Gulf
Harbor	Ridge
Hill	Isthmus
Draw	Marsh
Mesa	Mountain
Range	Mouth
Peak	Peninsula
Plain	Plateau
Port	Prairie
Rain Forest	Reservoir
Source	Strait
Stream	Swamp
Tributary	Tundra
Valley	Volcano

Geography Terms



Waterways	Flatlands	Highlands
Valley	Tundra	Peak
Tributary	Prairie	Ridge
		Mountain

Create a graphic organizer for your subject area



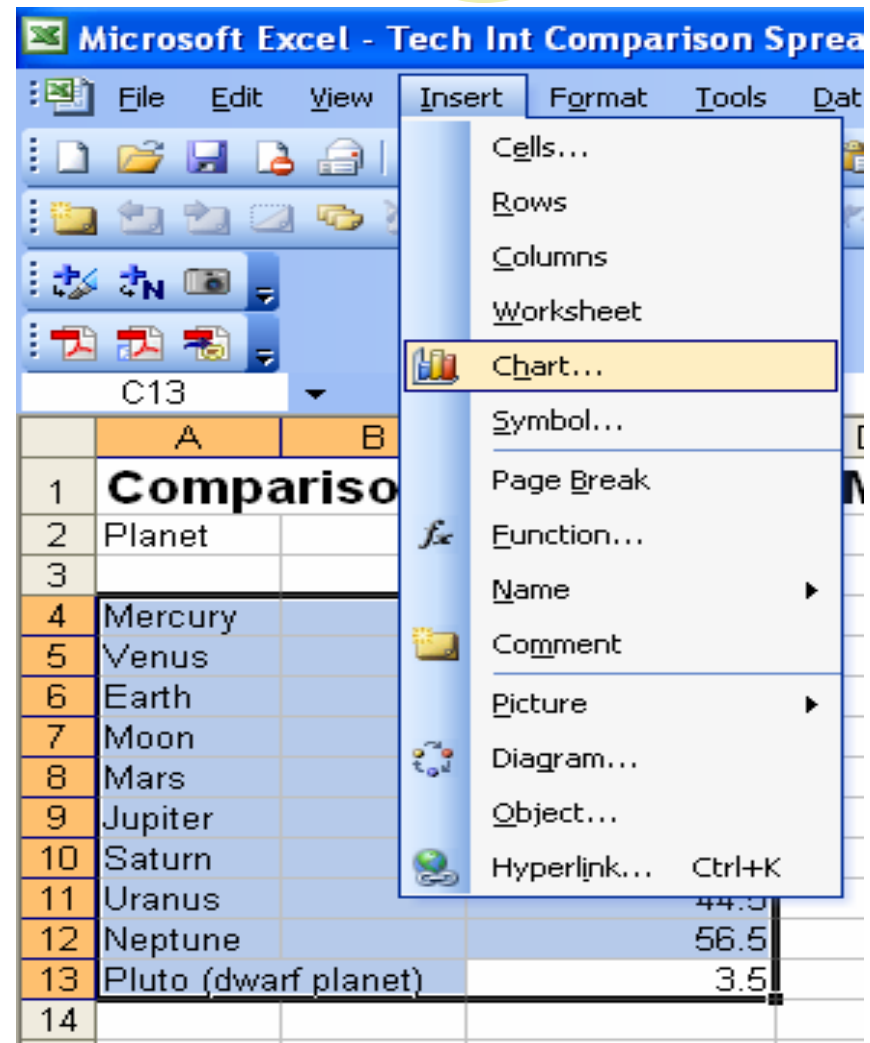
- Use tables
- Word art
- Clip art
- Insert pictures
- Create diagrams or organizational charts
- Insert autosshapes
- Fill colors
- Text options
- Format options

Using Excel for Comparison Charts

[illegible]

Comparison Spreadsheet

- To create a chart from the excel data, highlight the data for both the x and y axis that will make up the chart (planets vs weight)
- Go to the menu and choose >insert>chart



Choose the type of chart that you would like to create. Excel allows options for columns, bars, lines, etc. Choose a chart subtype (if applicable). Click next and enter in the remaining chart options such as titles & values. Choose where you would like the chart to appear (on another worksheet in excel or on the same page).

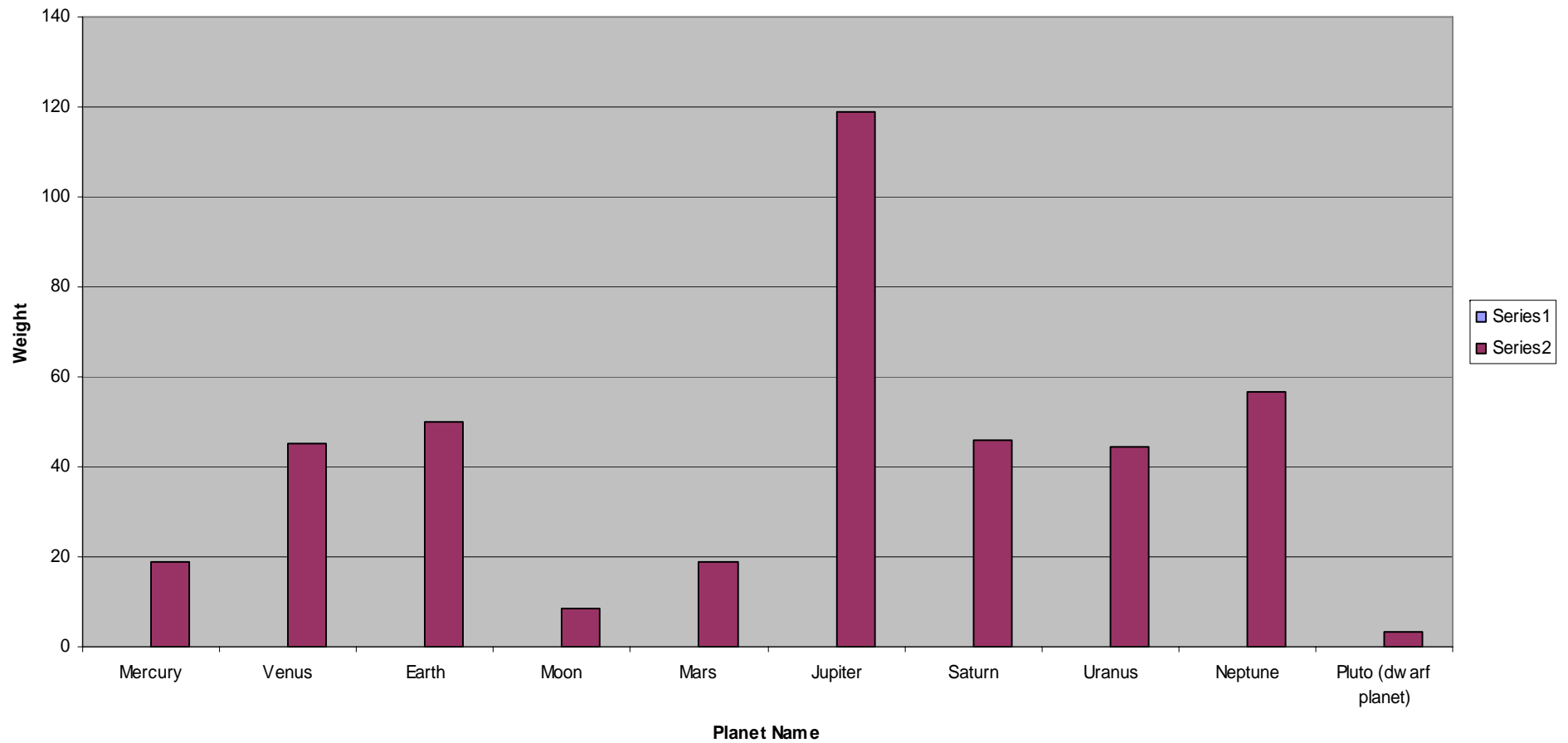
The screenshot displays the Microsoft Excel interface with a spreadsheet titled "Comparison Spreadsheet: My weight on different planets". The spreadsheet has columns for Planet, Weight (in lbs), and a calculated column for weight on different planets. The data is as follows:

Planet	Weight (in lbs)
Mercury	19
Venus	45
Earth	50
Moon	8.5
Mars	19
Jupiter	119
Saturn	46
Uranus	44.5
Neptune	56.5
Pluto (dwarf planet)	3.5

The Chart Wizard - Step 1 of 4 - Chart Type dialog box is open, showing the Standard Types tab. The Chart type is set to Column, and the Chart sub-type is set to Clustered Column. The description for Clustered Column is: "Clustered Column. Compares values across categories." The dialog box also includes a "Press and Hold to View Sample" button and "Cancel", "< Back", "Next >", and "Finish" buttons.

Comparison Spreadsheet

Weight on Different Planets



Use a technology planning template

- A technology planning template allows you to ensure that the technology that is being integrated into the classroom is aligned with technology standards (state or national)
- Use a planning resource to determine lists hardware & software needed
- What type of assessment will be used for this lesson?

3Technology Planning Template

McREL Technology Solutions (MTS) Lesson Plan Template

Name:
Subject area:
Grade level:
Lesson title:

Brief lesson description

District content standard/benchmark addressed

NETS-S technology standard addressed

Technology resources needed (hardware and software)

Procedure

Assessment Method

Bibliography



- ¹ Nine categories of instructional strategies graphic, *Using Technology With Classroom Instruction That Works*, 2007, p.8.
- ²Matrix of the Four Planning Questions graphic , *Using Technology With Classroom Instruction That Works*, 2007, p.13.
- ³Technology Solutions Lesson Plan Template, *Using Technology With Classroom Instruction That Works*, 2007, p.221.